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XI
BEEES IN THE COLLECTION OF CALIFORNIA
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1. *Colletes myroni* Cockerell

Female: San Francisco, California, April 30, 1911 (J. A. Kusche). This is a surprising record, as the species was described from Colorado. The head and pleura have black hair, while that on the thorax above is bright ferruginous.

2. *Colletes slevini* Cockerell, new species

Female: Length about 11 mm., anterior wing 7 mm.; black, the head and thorax densely covered with clear tawny yellow hair, becoming whitish on cheeks and thorax beneath, on dorsum of thorax rather short but not moss-like, and without black hairs intermixed; head broad, orbits converging below; malar space much broader than long; mandibles black; clypeus densely and coarsely striate-punctate, glistening; antennæ entirely black, flagellum short; mesothorax smooth and shining on disc posteriorly; base of metathorax transversely channelled, with plicæ at sides; tegulæ very dark brown; wings hyaline, appearing milky; stigma small, dark brown; nervures black, second cubital cell very broad, receiving recurrent nervure in middle; legs with pale hair; abdomen with the first segment opaque except posteriorly, the punctures fine and weak; following segments more shining, all with apical yellow hair bands pale and not very dense; first segment with much yellowish hair at base, and

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long hairs overlapping the middle part. Basal nervure falling considerably short of nervulus.

Easily known from such species as *C. americana* Cresson by the dull, not polished, first abdominal segment. In this it rather resembles *C. andrewsi* Ckll., but differs from it by being considerably smaller and less robust, with very much shorter wings.

Type: Female, No. 1648, Mus. Calif. Acad. Sci., collected by L. S. Slevin, September 24, 1922, at Paraiso Springs, Monterey County, California.

3. *Colletes daleæ* Cockerell

Three females, La Paz, June 29 (Ferris).

4. *Hylæus conspicuus* (Metz)

Males: Santa Clara County, California, July 1, 1916 (W. M. Giffard). Compared with cotypes received from Metz. Mokelumne Hill, California, September (Blaisdell).

5. *Hylæus asininus* (Cockerell & Casad)

Males: Potholes, Imperial County, California, April 10, 1923 (Van Duzee).

6. *Hylæus giffardiellus* Cockerell, new species

Male: Length about 6.5 mm.; black, with the face markings deep chrome yellow and the wings fuliginous; orbits little converging below, face broad, entirely deep yellow (orange) below level of antennæ; supra-clypeal mark much longer than broad, not notched above; lateral marks cut off mesad at about middle of supra-clypeal mark, but extending as bands up orbital margins, ending abruptly but not dilated (style of *H. citrinifrons* Ckll.); labrum with a yellow spot and mandibles largely yellow; scape a little dilated, with a yellow stripe in front; flagellum bright ferruginous beneath; front and mesothorax (except posteriorly) dull, with very dense fine punctures; scutellum shining, the strong punctures distinctly separated; posterior face of metathorax dull, with a narrow shining median groove; prothorax above (except middle) and tubercles broadly yellow; tegulæ with a yellow spot; anterior tibiæ in front, middle

tibiæ broadly at base and a mark at apex, and basal half of hind tibiæ, yellow; basitarsi pale yellow, more or less dark at apex; first recurrent nervure reaching apical corner of first cubital cell; abdomen strongly and distinctly punctured; first segment with a small fringe of white hair at sides; second and third segments swollen in middle so that their apices appear depressed; hind margin of fourth and fifth segments faintly reddish.

Allied to *H. citrinifrons* (*Prosopis citrinifrons* Ckll.), but easily separated by the color of the antennæ, the longer supra-clypeal marks, and strongly punctured abdomen. The face is much broader than in *H. stevensi* Crawford.

Type: Male, No. 1649, Mus. Calif. Acad. Sci., collected by W. M. Giffard, May 24, 1917, in **San Joaquin Co., California**.
Paratype, one male, same data.

7. *Parandrena concinnula* Cockerell

Males from Whittier, Calif., Feb. 22, 1911, on flowers of *Rhus* (P. H. Timberlake). This is the first exact locality for the species.

8. *Diandrena perchalybea* (Viereck)

Females: Carmel, California, May 19 (Van Dyke). The hair of the head and thorax above is conspicuously paler than in a specimen from Washington State, whence the species was described, but the difference cannot indicate another species. The bees, like the birds and mammals, tend to melanism northward in the Pacific coast region, but good series from many localities will be required before we can fully elucidate the phenomenon and clearly distinguish whatever local races may exist. This work should of course be done by a resident of one of the coast States.

A male from Mokelumne Hill, California (Blaisdell), is referred here, though the male of *D. perchalybea* has not been described, and the reference should be confirmed by field observations. It is exceedingly like the males of *D. nothocalaidis* Ckll. and *D. cyanosoma* Ckll., the abdomen being duller than in the former, but more shining than in the latter. In all three

the face has long white hair, black along the orbits. In *D. cyanosoma* the area of metathorax is finely wrinkled or subreticulate all over, with short transverse rugæ on each side of middle line; in *D. nothocalaidis* it is quite different, with fewer rugæ, and well separated longitudinal ones in the basal part. In the male supposed to belong to *D. perchalybea*, it is sculptured practically as in *D. nothocalaidis*, but the posterior angle of the enclosure is much wider. The flagellum is much redder than in *D. nothocalaidis*.

The metathoracic sculpture of the male differs appreciably from that of the female *D. perchalybea*, but the difference is similar to that in the undoubted sexes of *D. nothocalaidis*.

9. *Nomia melanderi* Cockerell

Four males from Payette, Idaho, June 29, 1922 (Van Dyke), and one from Los Baños, California, May 22, 1918 (Van Duzee), have black tegulæ, and no green band on first abdominal segment, and must be referred to *N. melanderi*. The abdominal bands are bluish green, and the antennæ and structure of abdomen, etc., are as in *N. acus* Cockerell, which is apparently to be called *N. melanderi acus*, being merely a slightly modified southern race.

10. *Nomia californica* Cockerell

Preston, Idaho, 19 females, July 17, 1922 (Van Duzee); Logan, Utah, 4 females, July 18, 1922 (Van Duzee); Pot-holes, Imperial Co., California, 1 female, April 11, 1923 (Van Duzee). The Californian specimen has narrower bands than the others. The Utah and Idaho records represent a great extension of range, but I cannot find any grounds for separating them from *N. californica*.

11. *Halictus pavonotus* Cockerell, new species

Female (type): Length 8 to 9 mm.; head, thorax and abdomen green, legs and antennæ black; hair of head and thorax abundant, rather long, erect, fringed with ochreous, but practically white on cheeks and lower part of thorax; face broad, inner orbits curved, but eyes not distinctly

emarginate; clypeus prominent and produced, shining black, its upper part green, the surface longitudinally grooved; mandibles slender, black, rufescent at tip; supraclypeal area brassy; sides of face and front shining, but middle of front dull; mesothorax peacock green (purple in specimen from Golden Gate Park), dullish because very densely and finely punctured; scutellum shining, well punctured, depressed in middle; area of metathorax broad, well-defined, obtusely pointed behind, entirely covered with fine rugæ, which at sides form delicate ribs; sides of metathorax minutely roughened and dull; tegulæ punctured, piceous with hyaline margins, posteriorly with a red spot; wings hyaline, slightly brownish, stigma dull amber, nervures dilute fuscous; second cubital cell very broad, receiving recurrent nervure considerably before its end; third cubital subquadrate, narrowed about a third above; basal nervure falling short of nervulus; legs with abundant dull white hair, stained with red on outer side of middle tibiæ, a pale reddish tuft at end of hind basitarsi; hind spur curved, simple (wholly without spines); abdomen blue-green, shining, first segment highly polished; bases of second and following segments broadly covered with dull white tomentum, the apical portions also with appressed white hairs, evident only in certain lights, the apical half of the abdomen becoming very hairy; basal part of second ventral segment black and very finely cross-striate.

San Francisco, California, March 30, 1913 (Van Dyke), March 30, 1919 (Van Duzee), and April 20, 1913 (Van Dyke). Also one labelled "Golden Gate Park, San Francisco, April 21, 1912 (J. C. Thompson)."

Male: Length hardly 8 mm., more slender; head and thorax with much white hair, not tinged with ochreous; clypeus green at base, rosy in middle, black at apex, where it is strongly bigibbous; supraclypeal area bluish green, shining; flagellum long, moniliform, dull red beneath; mesothorax and scutellum shining, but closely punctured; wings clear; tarsi dark. Taken at San Francisco, October 29, 1911 (Van Dyke).

A completely isolated species in our fauna, having the appearance of the South American genus *Pseudagapostemon* Schrottky, but differing in the simple hind spur of hind tibia. There is a slight general resemblance to *H. aquilæ* Ckll., from New Mexico.

Type: Female, No. 1650, Mus. Calif. Acad. Sci., collected by E. C. Van Dyke, March 30, 1913, at **San Francisco, California**.

12. *Halictus ovaliceps* Cockerell

Females: Meadow Valley, Plumas County, California, 3500-4000 ft., June 5 (Van Dyke); Nanaimo, B. C., Biological Station, June 23 (Van Duzee). The British Columbia specimen has the flagellum almost entirely black and the first abdominal segment dark except the broad apical margin.

13. *Halictus aspilurus* Cockerell, new species

Female: Length 7 mm.; anterior wing about 4.6 mm.; head, thorax and legs black; abdomen shining, very bright ferruginous; basal part of first tergite infuscated, black at sides, other segments with dusky suffused spots at extreme sides, the apex red without spots; hair of head and thorax very scanty, white, long and erect on mesopleura, forming a narrow, dense fringe along upper margin of prothorax and about tubercles; mandibles with about the apical half dark red; head broad, about circular seen from in front; clypeus shining, very sparsely punctured; front dull, excessively closely and minutely punctured; flagellum obscurely reddened beneath toward end; mesothorax and scutellum shining, with very minute punctures, quite dense on mesothorax; area of metathorax semilunar, microscopically reticulated; posterior truncation shining; tegulae rufous with dark base; wings hyaline, faintly reddish; stigma large, reddish sepia; nervures rather pale brown; first recurrent meeting second intercubitus; second cubital cell very broad below; legs with whitish hair; hind spur pectinate; abdomen without hair-bands.

Resembles *H. ovaliceps*, but easily known by the round head. From *H. arizonensis* Crawford it is known by the character of the pubescence and the entirely red apical part of abdomen.

Type: Female, No. 1651, Mus. Calif. Acad. Sci., collected by E. P. Van Duzee, May 22, 1920, at Pleyto, Monterey Co., California.

14. *Halictus farinosus* Smith

Female: Santa Monica, California (F. C. Clark). The hind spur of the hind tibia is serrate; in the closely related *H. lerouxii* Lep. it is dentate.

Female: Tuolumne County, California, June 16 (W. M. Giffard).

15. *Halictus (Seladonia) catalinensis* Cockerell

Female: Santa Cruz Island, California, May 16 (Van Duzee). Described from Catalina Island.

16. *Halictus vanduzeei* Sandhouse & Cockerell

Two females, La Paz, June 29 (Ferris). These have the face narrower than the type, but otherwise agree.

17. *Agapostemon digueti* Cockerell

Numerous males, La Paz, June 29 (Ferris).

18. *Agapostemon texanus vandykei* Cockerell, new subspecies

Female: Size of *A. texanus*, but yellowish green, with strong and beautiful golden reflections on face and abdomen; hair of head and thorax pale ochreous; wings dusky all over with a reddish tint. Less conspicuous features are the broader face, more finely plicate area of metathorax (with slight indications of a differentiated median space) and more finely striate posterior truncation. It does not resemble *A. texanus iowensis* Ckll., and compared with that form, the striæ on truncation of metathorax are much more nearly vertical (less transverse). The area of metathorax is more like that of *A. texanus subtilior* Ckll., but that form is quite differently colored. From *A. borealis* Crawford, which is another segregate from *A. texanus*, the present form will be known by the smaller size and golden (instead of bluish) reflections.

As the three specimens are alike, we doubtless have a distinct subspecies or race.

Type: Female, No. 1652, Mus. Calif. Acad. Sci., collected by E. C. Van Dyke, June 25, 1921, in Yosemite Valley, California. *Paratypes*, two females, same place, July 1, 1921.

19. *Sphecodes arvensiformis* Cockerell

Males: Lagoon, Utah, June 30 (Van Duzee); Sobre Vista, Sonoma County, California, May 12 (J. A. Kusche). *S. arvensiformis* was described from the female. These entirely black males are referred to it on the basis of probabilities, but the reference should be confirmed by biological observations.

They very closely resemble the male of *S. arvensis* Patton, but are distinctly larger, with darker wings, and more robust flagellum. The Utah form differs from that of California by the uniformly dusky wings, those of the latter being pale, with the apical margin broadly dusky. In the California specimen the first recurrent nervure meets the second intercubitus; but one Utah specimen has the second cubital cell rather broad, with the recurrent nervure near its end, while the other has the cell narrow, and the recurrent near the middle. I extracted the genitalia from the California specimen and the Utah one with broad second cubital, and do not see any material difference. Females of *S. arvensiformis* have the second cubital narrow. As matters stand at present, it appears necessary to refer these black males to *S. arvensiformis*, but future work may prove the existence of more than one species of this alliance in the region concerned.

20. *Perdita pyrifera* Cockerell, new species

Female: Length about 5.5 mm.; head and thorax green, the mesothorax shining yellowish green, and very sparsely punctured; wings remarkably short, strongly dusky, stigma and nervures sepia brown; abdomen flattened, dullish, entirely light yellowish ferruginous except a pair of suffused black spots on first segment, and a black line at each extreme side of second; the second and third segments may show suffused and faint traces of transverse yellowish bands; head ordinary, facial quadrangle longer than broad; no supraclypeal or dog-ear marks; clypeus shining black, sparsely punctured, with a very slender median pale line (sometimes reduced to a dot) on upper part; labrum black, prominent, concave in middle; mandibles light yellow, black at end; lateral face marks large, very pale yellow, pear-shaped, the very acute upper end on orbit at about level of antennæ; flagellum pale yellowish beneath; front dull; cheeks unarmed; tubercles and two marks on upper border of prothorax light yellow; pleura shining; tegulæ dark in front, very pale behind; second cubital cell very large, greatly narrowed above; anterior and middle femora robust; legs black, or very dark brown; anterior and middle knees, and broad stripe down their tibiæ in front, pale yellow.

Runs in my table next to the much smaller and quite different *P. chamæsarachæ* Ckll. Superficially, it resembles *P. ruficauda* Ckll., but is easily separated by the polished mesothorax, and first recurrent nervure joining second cubital cell a short distance from base, instead of meeting the intercubitus.

Type: Female, No. 1653, Mus. Calif. Acad. Sci., collected by E. P. Van Duzee, May 22, 1920, at **Pleyto, Monterey Co., California**. *Paratypes*, two females, same data.

21. *Perdita claypolei* Cockerell

Female: Mt. San Antonio, California, 5000 ft., at flowers of *Eriogonum fasciculatum*, August 22 (Timberlake). The head and thorax are yellowish green instead of blue-green as they are in a cotype from Mt. Lowe.

22. *Perdita exclamans imperialis* Cockerell, new subspecies

Female: Lateral face-marks linear above, not reaching level of ocelli; bands on abdominal segments narrower, those on second and third like those on fourth and fifth. The hind margin even except for a broad median notch, and the oblique extensions at extreme sides to edge of abdomen; yellow mark on lower part of cheeks reduced to a small spot.

Type: Female, No. 1654, Mus. Calif. Acad. Sci., collected by E. P. Van Duzee, April 8, 1923, at **Potholes, Imperial Co., California**, on mesquite. Typical *exclamans* Ckll. also visits mesquite.

23. *Perdita cleomellæ* Cockerell, new species

Female (type): Length about 4 mm.; head and thorax shining dark green, with white or cream-colored markings, the mesothorax and scutellum very highly polished; head ordinary, cheeks unarmed; labial palpi with last three joints together shorter than first; labrum, mandibles (except apically), clypeus, quadrate supraclypeal mark and lateral marks forming broad bands ending obliquely at level of antennæ, white; cheeks dark, with white hair; no dog-ear marks; scape creamy-white; flagellum dark, pallid beneath, and the tip pallid above; collar and tubercles cream-color; tegulæ hyaline with a white spot; wings clear hyaline, stigma and marginal cell margined with brown; first four legs and hind femora cream color, hind tibiæ and tarsi blackish, the tibiæ pale at base; abdomen cream-color with four entire black bands; apical plate red; venter entirely pale.

Male: Length a little over 3 mm.; face polished, entirely creamy-white below antennæ, the lateral marks extending some distance up sides of front, ending very obliquely; flagellum light brown above, pale yellow below; hind tibiæ pale yellow; abdomen with five bands, but they are more or less brown, especially the last two.

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Both sexes at flowers of *Cleomella obtusifolia*; Barstow, California, September 12, 1924 (P. H. Timberlake). Numerous specimens were taken on the flowers. The female comes close to *P. interserta* Ckll., from Los Angeles County, California, but is easily separated by the small size and white markings. There is also some resemblance to the much larger *P. townsendi* Ckll. The male shows some resemblance to *P. exclamans atramentata* Ckll., from Sonora. Two paratypes have been deposited in the collection of the California Academy of Sciences.

24. *Perdita timberlakei* Cockerell, new species

Female (type): Length slightly over 4 mm.; head and thorax shining dark blue-green, yellowish green or mesothorax; head small, without light markings, but mandibles ferruginous beyond base, scape pale yellow in front, flagellum dusky reddish beneath; upper border of prothorax and tubercles pale yellow; tegulae hyaline, with a yellow spot; wings hyaline, stigma and marginal cell dusky-margined; legs black, with the anterior tibiae very broadly light lemon-yellow in front, their tarsi pale reddish; middle tibiae with a yellow stripe; abdomen black, with four lemon-yellow bands, only the first reaching the lateral margins; first segment yellow at base, and this connected with a large discal more or less trilobed yellow spot; venter brown.

Male: Length about 3 mm.; face below antennae, labrum and mandibles, clear white, the lateral marks extending to a point about half way up front; scape robust, light yellow in front; flagellum light yellow beneath; yellow on upper border of prothorax reduced to a spot at each corner; anterior and middle femora yellow beneath; first four tibiae yellow, hind tibiae yellow in front; abdomen dark brown, with yellow bands at bases of second and third segments, and vestiges of one on fourth.

At flowers of an annual *Eriogonum*, Riverside, California, September 24, 1924 (P. H. Timberlake). Runs in the tables near to *P. subfasciata* Ckll. and *P. punctifera* Ckll., but is quite distinct. It is not at all allied to *P. florissantella* Ckll., which visits *Eriogonum* in Colorado. Two paratypes have been deposited in the collection of the California Academy of Sciences.

25. *Perdita vittata* Cockerell

Two females, La Paz, June 29 (Ferris).

26. *Spinoliella peninsularis* Cockerell

Very many specimens, both sexes, La Paz, June 29 (Ferris).

27. *Spinoliella edwardsii* (Cresson)

Male and female: Huntington Lake, California, 7000 ft., July 10 (Van Duzee). The female is of the form *lateralis* (Cresson); male, Fallen Leaf Lake, Lake Tahoe, July (L. S. Rosenbaum).

28. *Spinoliella scutellaris* (Fowler)

Both sexes; Salt Lake City, Utah, June 25 (Van Duzee); male, Lagoon, Utah, June 30 (Van Duzee); females, Logan, Utah, July 18, and Saltair, July 12 (Van Duzee). The male is easily known by the abruptly dark apical part of the antennæ. The female was described by Fowler as *Calliopsis visaliensis*. The type of *S. scutellaris* was taken by Woodworth at Fresno, that of *visaliensis* by the same collector at Visalia, both on May 9.

It is now clear that *S. scutellaris peninsularis* Ckll. is a distinct species, *Spinoliella peninsularis*. The male, collected by Ferris at La Paz, June 29, has the flagellum white beneath to the end.

29. *Spinoliella anthidius* (Fowler)

Male: Bear Valley, San Bernardino Mts., California, July (F. C. Clark). Fowler's description is of the male, not female as he has it. The abdominal bands, broadly interrupted sublaterally, are very distinctive. This species has previously been known only from Fowler's type, collected by Woodworth at Tulare.

30. *Spinoliella triangulifera* Cockerell, new species

Female: Length slightly over 7 mm.; black, with cream-colored subequilateral triangular marks at lower corners of face, and large cream-colored spots at sides of first four abdominal segments, those on first two rounded, on the others transverse, pointed mesad; hair of head and thorax

quite long and abundant, grey, more brownish dorsally; clypeus shining, with irregular strong punctures, and a very inconspicuous median pale line, not extending more than half way down; flagellum obscurely reddish beneath; mesothorax highly polished, very sparsely punctured; tegulae black; wings strongly greyish; stigma and nervures dark brown; abdomen broad, shining.

Type: Female, No. 1655, Mus. Calif. Acad. Sci., collected by E. C. Van Dyke, July 1, 1921, at Yosemite Valley, California.

Closely allied to *S. edwardsii* var. *lateralis* (Cress.), but smaller, the wings not so strongly reddened, more greyish, and the scutellum not excavated or depressed in middle. It is also related to *S. obscurella* (Cress.), but that species is larger, with flagellum bright ferruginous beneath, and continuous bands on abdomen.

31. *Spinoliella equina* Cockerell, new species

Female (type): Length nearly 7 mm.; black, with cream-colored markings; hair of head and thorax dull whitish, dorsally becoming brownish; eyes green; mandibles whitish at base, then red, apically black; labrum black; clypeus light, with a large black horse-shoe shaped mark (the arms ending on upper margin), from which there is a small projection on each side, or rarely the middle of clypeus is entirely black, except a small pale spot; supraclypeal and dog-ear marks present; lateral face marks very broad triangles with base on orbit, the upper point acute, level with antennæ; flagellum rather dull red beneath, except at base; mesothorax shining, sparsely punctured; post-scutellum and obscure spot on tubercles cream-color; tegulae piceous; wings hyaline, very faintly dusky; stigma slender, very pale reddish, nervures brown; anterior and middle knees, and anterior tibiae in front, pale yellow; anterior tarsi red; abdomen with cream-colored bands, interrupted on first two segments (very broadly on second), notched or slightly interrupted on third, entire on fourth; all these bands excavated sublaterally behind.

Male: Described by Swenk and Cockerell as the male of *S. hesperia*, but evidently belonging to the present species. *S. hesperia* Swenk & Ckll. must be restricted to the form described from the female, which has bright yellow markings.

The female resembles *S. australior* Ckll., but that species lacks the dog-ear marks (at each side of supraclypeal mark), and has the postscutellum black. The face-marks of female *S. equina* resemble those of the much larger *S. zebrata* (Cress.).

Type: Female, No. 1656, Mus. Calif. Acad. Sci., collected by E. P. Van Duzee, August 21, 1919, at **Stockton, California**.

The above species of *Spinoliella* may be separated by the following key:

- Lower side of flagellum with end broadly black or very dark, abruptly contrasting with the creamy-white before; males.....
 *scutellaris* (Fowler)
- Flagellum not thus colored..... 1
1. Clypeus entirely pale or with only a pair of black dots; males.. 2
 Clypeus not, or not all, pale; females..... 4
2. Large species, fully 10 mm. long; face light yellow.....
 *anthidius* (Fowler)
- Much smaller species..... 3
3. Flagellum dark or reddish beneath..... *edwardsii* (Cresson)
 Flagellum pale yellowish beneath..... *equina* Ckll.
4. No pale color at sides of clypeus, which has only a median pale stripe 5
 Sides of clypeus with large pale spots or all pale..... 6
5. Larger, wings reddish, scutellum excavated or depressed in middle *edwardsii lateralis* (Cresson)
 Smaller, wings greyish, scutellum not excavated or depressed in middle *triangulifera* Ckll.
6. Lateral face marks short, or reduced to dots. *scutellaris* (Fowler)
 Lateral face marks long, reaching to level of antennæ above....
 *equina* Ckll.

32. *Calliopsis pugionis* Cockerell, new species

Female: Length a little over 7.5 mm.; black, with the anterior and middle knees shining yellow, an interrupted yellow band on upper margin of prothorax (but tubercles black), and lemon-yellow markings on face, as follows: triangular supraclypeal mark (highly polished and impunctate), lateral corners of clypeus broadly, and upper and lateral margins narrowly, with a dagger-shaped median line from the upper margin, hardly reaching half way to apex, and very broad lateral face-marks, separated from clypeus at upper part, and ending acutely on orbital margin above level of antennæ; face very broad; eyes deep green; mandibles red in middle; flagellum bright ferruginous beneath; hair of head and thorax largely white, but dorsally pale fulvous, short on thorax above; mesothorax closely punctured; base of metathorax highly polished; tegulæ dark brown; wings brownish, stigma and nervures brown; abdomen shining, with four white hair-bands, that on first segment broadly interrupted in middle; hind margins of segments rufescent; ventral segments with transverse depressions, deep on second.

Nearest to *E. coloradensis* Cresson, but easily separated by the color of the face-marks.

Type: Female, No. 1657, Mus. Calif. Acad. Sci., collected by E. P. Van Duzee, June 3, 1917, at **Soboba Springs, Riverside Co., California.**

33. *Panurginus atriceps* (Cresson)

Male: Carmel, Monterey County, California, March 25 (Van Duzee). Known by the entirely black face of the male, and the first recurrent nervure meeting first intercubitus, or even falling basad of it. It is related rather to *P. albopilosus* (Lucas), of Spain and Algeria, than to the other N. American species.

Females: Portland, Oregon, July 3 (W. M. Giffard).

34. *Hesperapis pellucidus* Cockerell, new species

Male: Length about 7 mm.; black, with abundant pure white hair; runs in my table and Crawford's to *H. larrea* Ckll., which it very closely resembles, having the same size and appearance, clear wings, and long white hair covering clypeus. It differs thus: flagellum black, with at most a very obscure reddish tint beneath; mesothorax more distinctly punctured; extreme base of metathoracic area dull and granular; first recurrent nervure nearer base of second cubital cell, and much nearer to base than second to apex; basal nervure not so remote from nervulus; hind margins of abdominal segments with broad dense pure white bands of tomentum. The insect has the aspect of a small Colletes.

Numerous males from San Francisco, California, April 20-June 6 (E. P. Van Duzee and F. E. Blaisdell). There is a rather close general resemblance to *H. leucura* Ckll., from Lower California.

Type: Male, No. 1658, Mus. Calif. Acad. Sci., collected by E. P. Van Duzee, June 6, 1920, at **San Francisco, California.**

35. *Halictoides davidsoni* Cockerell

Many males from Huntington Lake, Fresno County, California; 7000 ft., July 4 to 28 (E. P. Van Duzee and F. C. Clark), and one from Cascada, Fresno County, 6000 ft., July 29 (Van Duzee). There are also two females from Huntington Lake, July 8 (Van Duzee). The female runs in my table (Entom. News, 1916, p. 62) to the same place as *H. mulleri* Ckll., but is readily known from that species by the absence of the broad bands of dull white tomentum at bases of abdominal segments, though there is a very slender band at base of fourth segment, only visible when the segment is much exerted. Other features are the greenish, highly polished and strongly punctured mesothorax, the long, black hair on clypeus, and the flagellum only very obscurely reddish beneath.

36. *Halictoides (Cryptohalictoides) spiniferus* (Viereck)

Males from Huntington Lake, Fresno County, California, July 9 to 28 (E. P. Van Duzee and F. C. Clark). Described from Nevada; Miss Stinchfield (now Mrs. Ferris) informed me that the female had been taken at Gem Lake, Calif.

37. *Halictoides virgatus* Cockerell

Male: Bradley, California, April 27 (Van Duzee).

38. *Halictoides mulleri* Cockerell

Male: Pyramid Park, El Dorado County, California, 8000 ft., August 8 (Van Dyke). In this specimen the scape is unusually stout.

39. *Halictoides holocyaneus* Cockerell, new species

Male: Length about 9 mm.; head, thorax and abdomen steel blue, the region below the ocelli yellowish green, and the abdomen greenish; legs also more or less metallic; hair of head and thorax abundant, dull white, with some dark hair at sides of face, and long dense pure white hair on clypeus; head broad, facial quadrangle broader than long; mandibles ferruginous at apex; lower part of front excavated in middle; antennæ

very long, dark, the flagellar joints modose, and obscurely reddish beneath between the modes; mesothorax shining, finely but not densely punctured; scutellum highly polished, hardly punctured in middle; base of metathorax roughened; tegulæ piceous; wings smoky hyaline, stigma and nervures reddish brown, the color dull; first recurrent nervure as far from base of second cubital cell as second from apex; legs with dull whitish hair, not greatly modified; middle femora stout; hind femora very stout, claviform; hind trochanters spined; hind tibiæ very robust; abdomen without hair bands, but with thin white hair on first three segments, and black beyond; fifth ventral segment with a cuneiform red area in middle.

Easily known by the blue color and relatively unmodified legs. It is much larger than *N. viridescens* Crawford, from California.

Type: Male, No. 1659, Mus. Calif. Acad. Sci., collected by E. C. Van Dyke, July 8, 1922, at Baker, Oregon. *Paratype*, one male, same data.

40. *Halictoides spilurus* Cockerell, new species

Female: Length about 7 mm.; head and thorax dark green; clypeus, antennæ and legs black; abdomen rufofulvous, the first segment black except apical margin, second black at sides, and suffusedly blackened in middle, third laterally very broadly black, but both second and third have broad depressed hyaline margins beyond the black, fourth and fifth with narrower black bands laterally, the black in all cases strongest along the hind margins of the elevated part of the segment, giving the effect of broad oblique stripes or bands; head, thorax and legs with long erect white hair, but much black on upper part of clypeus and scape, and on thorax above the hair is slightly yellowish; the hair is very long and spreading on hind tibiæ; head transversely oval, facial quadrangle much broader than long; mandibles obscurely reddish apically; clypeus transverse, shining, strongly but not very densely punctured; front and vertex granular; mesothorax shining, with close small punctures; scutellum polished, not so distinctly punctured; area of metathorax transversely broadly and deeply hollowed, channel-like, finely striate; tegulæ piceous, very dark; wings greyish hyaline, stigma and nervures dark brown; first recurrent nervure nearer to base of second cubital cell than second to apex; legs ordinary, spurs ferruginous; first abdominal segment polished, with very weak punctures; rest of abdomen shining, but less brilliant; apical tuft red; fourth ventral segment with a broad transverse depression.

Very distinct by the color and markings of the abdomen.

Type: Female, No. 1660, Mus. Calif. Acad. Sci., collected by E. P. Van Duzee, July 12, 1919, at **Huntington Lake, Fresno Co., California**, at 7000 ft. *Paratypes*, two females, same place, July 22, 1919.

41. *Pseudomelecta californica* (Cresson)

Oracle, Arizona, July 24 (J. O. Martin).

42. *Ericrocis arizonensis* Baker

Oracle, Arizona, July 24, 1924, at sunflower (Van Duzee). Oracle is the type locality, the original specimens having been collected there by Osler.

43. *Triepeolus verbesinæ* (Cockerell)

Both sexes: Oracle, Arizona, July 24 (Van Duzee). One male is from sunflower.

44. *Triepeolus pacis* Cockerell, new species

Male: Length about 8.3 mm.; black, with the ornaments of head and thorax above very pale ochreous, of pleura, coxæ and face (which is densely covered with hair), white; scape black, very obscurely reddish at apex; flagellum bright ferruginous at extreme base (with a black mark on inner side), otherwise black; eyes dark grey; tegulæ bright ferruginous; wings dusky hyaline, nervures and stigma piceous; legs bright ferruginous, hind tibiæ suffused with dusky on outer side, but there covered with appressed white hair; hair on inner side of hind basitarsi light orange; hind spurs black or nearly so; apical plate of abdomen dark brown, long and nearly parallel-sided. Labrum dusky in middle, ferruginous at sides; mandibles red in middle; mesothorax with a pair of rather short stripes, reaching anterior margin, but not connected with marginal band, which only goes to anterior corners; scutellum strongly bigibbous; axillæ prominent; upper part of mesopleura with a broad transverse band of dense white hair, below this the surface is thinly hairy, the very dense punctures with shining margins visible; abdominal bands even and entire, except that the light hair at base of first segment is interrupted; black area on first segment a very broad band, ending very obliquely at sides; lateral corners of black on second segment rounded, not sharply acute; venter with much pure white hair, the outstanding fringe pale yellowish.

Related to *T. blaisdelli* Ckll. & Sandh., to which it runs in my recent table, but easily separated by the dark scape and flagellum, the area of metathorax bare except at sides, the larger and darker stigma, etc. From *T. mensæ* Ckll. it is easily known by the color of flagellum, etc. The transverse band on first abdominal segment is much broader than in *T. noræ* Ckll.

Type: Male, No. 1661, Mus. Calif. Acad. Sci., collected by G. F. Ferris, June 29, 1919, at **La Paz, Lower California.**

45. *Oreoposites vanduzeei*, Cockerell, new species

Female: Length a little over 5 mm., with broad convex abdomen; head and thorax black, with white hair, shining silvery on face, sides of thorax and metathorax, thin on thorax above, not hiding surface; abdomen entirely clear ferruginous, with thin pure white hair-bands more or less developed at sides of segments; legs ferruginous, with the anterior femora darkened above, and the hind spurs dark; labrum, mandibles and lower edge of clypeus dusky red, the labrum elongated, broadly rounded at end; antennæ ferruginous beneath; tegulæ dusky red; wings hyaline, faintly dusky. I have not ventured to extract the mouth parts from the unique specimen, but they are extruded, and the labial palpi measure about as follows in microns: first joint 575, second 350, third and fourth each 50; the maxillary palpi clearly show five joints. I cannot demonstrate the basal tubercle-like joint which should be present. The marginal cell is considerably shorter than in *O. scituli* Ckll., and the mesothorax is strongly and densely punctured. The basal portions of the abdominal tergites are finely and densely punctured.

The only species previously known, *O. scituli*, was found to be parasitic on *Spinoliella* in Colorado. The new species was taken at the same locality, on the same day, as a quantity of *Spinoliella equina*, and with little doubt is parasitic in the nests of that bee.

Type: Female, No. 1662, Mus. Calif. Acad. Sci., collected by E. P. Van Duzee, August 21, 1919, at **Stockton, California.**

46. *Exomalopsis pulchella arida* Cockerell

A very long series, including both sexes, indicates that what I recorded as *E. similis* is, as I then suspected, only a variety of *pulchella*. Both *pulchella* and *similis* were described from Cuba, and presumably represent the variation of the species in

that island. The form from Lower California appears to be a distinct race for which the above name is available. Most of the specimens in the series now before me distinctly belong to *arida* as originally defined, but some have the hair of hind tarsi pale ferruginous, lacking the blackish or grayish color. La Paz, June 29 (Ferris).

47. **Exomalopsis (Anthophorula) chionura** Cockerell,
new species

Female (type): Similar to *E. chlorina* Ckll. (from New Mexico), but eyes not or not distinctly green; stigma dark brown; mesothorax polished, without evident punctures (distinctly punctured in *chlorina*); white bands on second and third abdominal segments broader laterally. It is also very close to *E. texana* Friese, differing by the dark tegulae (clear red in *texana*), dark stigma (pale amber in *texana*) and pure white (instead of creamy) hair on abdomen.

Male: Similar in most respects, but with narrower face; the clypeus (except two spots), labrum and basal part of mandibles pale yellow; flagellum long, dull ferruginous beneath. Compared with the male of *E. coquilletti* (Ashmead), it is readily separated by the shorter flagellum, and pure white hair on abdomen. The male of *E. chlorina* is unknown.

I hesitated whether to call this a distinct species, or a race of *E. chlorina*, but it seems best to regard it as a species, on account of the difference in the sculpture of the mesothorax. Presumably the closely related species of this group have different flower-visiting habits. *E. chlorina* is known to visit *Sphæralcea* (Malvaceæ).

Type: Female, No. 1663, Mus. Calif. Acad. Sci., collected by E. P. Van Duzee, August 19, 1919, at Stockton, California. *Paratypes*, four females, one male, same data.

48. **Diadasia nigrifrons epileuca** Cockerell, new variety

Female: Length about 8 mm., anterior wing 7.5; antennæ entirely black; pale hair of thorax above and of occiput, clear white, not ochreous; light hair of abdomen confined to first segment, the other segments with very little hair.

Type: Female, No. 1664, Mus. Calif. Acad. Sci., collected by E. P. Van Duzee, July 25, 1918, at Sisson, Siskiyou Co., California.

The forms assigned to *D. nigrifrons* are not all alike, the known females being separable thus:

- Flagellum substestaceous beneath; hair of thorax above and occiput pale ochreous; abdomen with pale hair only on first segment
*nigrifrons* (Cr.) proper. 1
- Antennæ entirely black..... 1
1. Length about 8 mm.; hair of thorax above and occiput white; abdomen with pale hair only on first segment.....
var. *epileuca* Ckll.
- Length 10.5 mm.; hair of thorax above, and occiput ochreous; abdomen with pale hair on first two segments.....
var. *nerca* (Fowler)

Whether these differences indicate well-defined races, or merely individual variation, is not at present known.

49. *Diadasia australis* (Cresson)

One male, San Antonio District, Lower California, July 12 (Ferris).

50. *Megachile pugnata pomonæ* Cockerell

Female: Huntington Lake, Fresno, California, 7000 ft., July 30 (Van Duzee).

51. *Megachile wootoni calogaster* Cockerell

Female: Huntington Lake, Fresno County, California, 7000 ft., July 16 (Van Duzee).

52. *Megachile fidelis* Cresson

Female: Kings River Cañon, Fresno County, California, July 6 (Van Dyke).

53. *Megachile perihirta* Cockerell

Ryer Island, Solano County, California, June 16 (F. H. Wymore). Three females reared from the nest, sent by Prof. E. O. Essig. The female of this species was described as *M.*

grindeliarum Ckll. Compared with Colorado specimens, the Californian bees differ a little in being distinctly less shining (especially on the abdomen) and by having the eyes (in dry condition) dark brown.

54. *Megachile vandykei* Cockerell, new species

Female: Length 13 mm., width of abdomen 5 mm.; entirely black, with entirely black coarse pubescence, very abundant on face and thorax above, thin on upper side of abdomen, which is of the short broad type; mandibles broad, quadridentate; clypeus transverse, convex, extremely densely rugosopunctate, with a polished shining spot at middle of upper edge, and a median band in which the surface is shining between the punctures, lower margin thickened, slightly emarginate in middle; cheeks broad and rounded; mesothorax with disc polished, with scattered rather small punctures; scutellum closely and finely punctured; area of metathorax short, dull, the metathorax beyond somewhat shining; tegulae black, finely punctured; wings dilute brownish, nervures piceous; basal nervure meeting nervulus; hind basitarsi broad; abdomen shining, with scattered very fine punctures; ventral scopa entirely black.

Resembles *M. morio* Smith, but smaller. I have seen the type of *M. morio* in the British Museum; it is said to be from the "United States," but presumably came from Florida. There is a series of superficially similar black *Megachile* species in Peru. This is another melanic bee from Meadow Valley!

Type: Female, No. 1665, Mus. Calif. Acad. Sci., collected by E. C. Van Dyke, June 21, 1924, at Meadow Valley, Plumas Co., California, 5000-6000 ft.

Chelostomopsis Cockerell, new genus

Small bees allied to *Chelostoma*, but labial palpi four jointed, with two outstanding small joints; maxillary palpi three-jointed; lower margin of clypeus with a long median process, obtuse or truncate at end, parallel-sided; basin of first abdominal segment rather small, with a distinct rim; first recurrent nervure joining second cubital cell some distance beyond base. Type *Chelostomopsis rubifloris* (*Chelynia rubifloris* Cockerell).

True *Chelostoma* has only one outstanding small joint to labial palpi. This is also true of the subgenus *Gyrodroma* Thomson, type *nigricornis* Nylander. I designate *nigricornis* as the type of *Gyrodroma*, because of the confusion concerning

Thomson's other species, which he called *florisomnis*, whereas it was really *campanularum*.

Formicapis of Sladen has a process on clypeus, but it is broad-conical, and the position of the first recurrent nervure is quite different. The marginal cell of Formicapis is more narrowed apically.

In addition to the type species, the new genus includes *Chelostomopsis australis* (*Chelostoma australis* Cockerell). Only the female is known.

55. *Chelostomopsis rubifloris edwardsii* (Cockerell)

Female: Yorkville, Mendocino County, California, May 1 (Van Duzee). Typical *C. rubifloris* is from Seattle.

56. *Chelostomopsis australis nanus* Cockerell, new subspecies

Female: Length 6.5-7 mm. (typical *australis* about 9 mm.); wings distinctly dusky; area of metathorax polished and shining; red on second abdominal segment greatly reduced or wanting.

The type of *C. australis* was from near Los Angeles; the present form seems to be only a subspecies. The first recurrent nervure is much more remote from the base of second cubital cell than the second from apex of that cell. This is not the case with *Cephalapis jacintana*, which might perhaps be confused with it on account of the red at sides of base of abdomen.

Type: Female, No. 1666, Mus. Calif. Acad. Sci., collected by F. C. Clark, August, 1913, in Bear Valley, San Bernardino Co., California. *Paratype*, one female, same data.

57. *Cephalapis jacintana* (Cockerell)

Male: Bryson, California, May 18 (E. P. Van Duzee).

58. *Ashmeadiella howardi* Cockerell

Male: Bryson, Monterey County, California, May 18 (Van Duzee).

59. *Ashmeadiella crassa* Cockerell

Female: Mokelumne Hill, California, September 6 (Blaisdell). This is a larger, robust form, which may prove separable when the male is known. I have found quite parallel supposed variation in *A. meliloti* Ckll., but here also I am not without misgivings concerning the specific identity of the large and small forms.

60. *Chelynia rubi* (Cockerell)

Melanostelis betheli Ashmead is a synonym; *Melanostelis* may be regarded as a subgenus. Both sexes from Fallen Leaf Lake, California, June 26-July 26 (Van Dyke); Yosemite Valley, California, male May 15, female June 23 (Van Dyke); female, Meadow Valley, Plumas County, 3500-4000 ft., June 1 (Van Dyke). The original type female, from Seattle, has the light bands on first two abdominal segments very narrowly interrupted; they are not at all interrupted in the Californian specimens.

The male is only 6 to 7 mm. long, and has pure white hair on face, and much white hair on thorax; hair of pleura clear white.

61. *Chelynia franciscana* Cockerell, new species

Female: Length about 8 mm.; head and thorax green, abdomen blue-green, almost a peacock blue, the hind margins of the segments not purple; pubescence black; scape metallic; flagellum black, very faintly reddish beneath; mesothorax yellowish-green, shining, with coarse punctures; pleura blue-green, densely punctured; base of metathorax rugose; tegulae green; wings strongly dusky; legs blue-green; middle tibiae bidentate at end; abdomen polished, brilliant, the depressed hind margins of the segments much more finely and closely punctured than the part before; apical tergite not modified.

Allied to *C. pavonina* Ckll., but readily separated by the polished abdomen, with the hind margins of the segments not purple.

Type: Female, No. 1667, Mus. Calif. Acad. Sci., collected by E. P. Van Duzee, June 6, 1920, at **San Francisco, California.**

62. *Chelynia chlorocyanea* Cockerell, new species

Female: Length about 8 mm.; with deep rich peacock blues and greens, the head deep blue, becoming green between antennæ, mesothorax and scutellum blue suffused with green, pleura dark purple-blue, abdomen with first segment steel blue, the others green with hind margins of segments purple-blue, becoming black at edge; pubescence black, dense on face; scape dark blue; flagellum brownish beneath; mesothorax coarsely and closely punctured, the anterior middle prominent and shining; scutellum closely punctured; tegulæ blue, closely punctured; wings dusky; legs purple-blue; abdomen shining, but closely punctured, so that the whole surface appears roughened; in lateral view the hind margins of the ventral segments appear pale; last tergite not modified.

Close to *C. pavonina* Ckll., and perhaps only a variety or race, distinguished by the color of the thorax. *C. pavonina* occurs in Colorado.

Type: Female, No. 1668, Mus. Calif. Acad. Sci., collected by F. E. Blaisdell, in April, at **Mokelumne Hill, California.**

63. *Chelynia leucotricha* Cockerell, new species

Female (type): Length 7.5 to 9 mm.; head, thorax, abdomen and legs brilliant blue, suffused with greenish on clypeus, middle of front, and mesothorax; hair of head and thorax clear white, with black hairs sparsely intermixed, the white hair of face conspicuous; clypeus dull; scape blue, flagellum very obscurely brownish beneath; mesothorax with very large punctures, but shining between the punctures, which are not very dense on disc; scutellum shining, with large punctures; tegulæ blue-green; wings dilute fuliginous; abdomen shining but roughened, the hind margin of the first segment brilliant purple, of the others decreasingly purplish; hind margins of ventral segments appearing white in lateral view.

Male: Length 7 mm.; differing in the usual sexual characters.

Both sexes, Bear Valley, San Bernardino Mts., California, August 1913 (F. C. Clark). Huntington Lake, California (type locality), female, July 4, 1919, 7000 ft. (E. P. Van Duzee); Fallen Leaf Lake, July 14, 1915 (Van Dyke).

Related to *C. pavonina*, but easily known by the white hair on face.

Type: Female, No. 1669, Mus. Calif. Acad. Sci., collected by E. P. Van Duzee, July 4, 1919, at **Huntington Lake, Fresno Co., California.**

64. *Chelynia fragariella* Cockerell, new species

Male: Length about 6 mm.; not very robust, dark blue, the metathorax and region of ocelli greenish; abdominal markings cream color, consisting of bands across the first three segments, and a pair of short stripes on fourth; band on third segment narrowly interrupted, that on second constricted, all three bands shallowly emarginate sublaterally behind; head and thorax with outstanding white hair; scape slightly metallic, flagellum dark; mesothorax densely punctured; area of metathorax shining; tegulae dark reddish, narrowly metallic in front; wings brownish hyaline; basal nerve going basad of nervulus; small joints of tarsi somewhat reddish; abdomen shining.

Related to *C. elegans* (Cresson), but much smaller, and differently colored.

Type: Male, No. 1670, Mus. Calif. Acad. Sci., collected by E. C. Van Dyke, August 5, 1912, at **Strawberry Valley, El Dorado Co., California.**

65. *Chelynia holocyanea* Cockerell, new species

Female: Length slightly over 6 mm.; bright steel blue throughout, shining; first three abdominal segments with narrow widely interrupted dull white bands, the third reduced to a pair of short transverse stripes, at least as far apart as the length of either; hair of head and thorax thin, mixed black and white; middle of face greenish; clypeus densely punctured; flagellum obscure brown beneath; mesothorax polished, with well separated punctures; area of metathorax shining; tegulae blue, with a dark red spot behind; wings dilute fuliginous; abdomen shining; apex with black hair.

Related to *C. subcaerulea* (Cresson), but much smaller, and with fewer markings on abdomen. It is also much more brightly colored.

Type: Female, No. 1671, Mus. Calif. Acad. Sci., collected by F. E. Blaisdell, July 12, 1919, at **Huntington Lake, Fresno Co., California**, at 7000 ft.

66. *Chelynia nitidula* Cockerell, new species

Male: Length about 6.5 mm.; rich deep blue, with cream-colored bands on first four abdominal segments, and a pair of transverse marks close together on fifth; the band on first segment is constricted in middle, the others narrowly interrupted, and all are very shallowly excavated posteriorly on each side; hair of head and thorax white, mixed with black, entirely black on mesopleura; flagellum black; disc of mesothorax shining, with well separated punctures; area of metathorax shining; tegulae very dark, submetallic; wings dilute fuliginous; abdomen shining. There is long black hair on the scutellum.

Related to *C. subcærulca* (Cress.) and *C. pulchra* (Crawford). From the former it is separated by the small size and large amount of white hair on thorax above, as well as the rich blue color. It is much smaller than *C. pulchra*, which occurs in the Rocky Mountain Region.

Type: Male, No. 1672, Mus. Calif. Acad. Sci., collected by E. P. Van Duzee, May 19, 1920, at **Bryson, Monterey Co., California**.

67. *Chelynia subglauca* Cockerell, new species

Male: Length about 6 mm.; similar to *C. nitidula*, but differing thus: head and pleura very dark blue, thorax above very dark green, abdomen almost black, but with a bluish tint, the second band not interrupted; hair of face, cheeks and pleura black, but of mesothorax entirely white; marginal cell broader in proportion to its length.

Probably a melanic race of *C. nitidula*, and also very close to *C. subcærulca*.

Type: Male, No. 1673, Mus. Calif. Acad. Sci., collected by E. C. Van Dyke, July 25, 1920, at **Paradise Valley, Mt. Rainier, Washington**.

The above species of *Chelynia* may be separated thus:

Black, with white bands on abdomen.....	<i>rubi</i> Ckll.	
Blue or green.....		1
1. Abdomen without tegumentary bands.....		2
Abdomen with whitish tegumentary bands.....		4
2. Hair of face light; end of abdomen obtuse (males) or acute (females).....	<i>leucotricha</i> Ckll.	
Hair of face entirely black; females.....		3
3. Abdomen more shining; head and thorax green.....	<i>franciscana</i> Ckll.	
Abdomen less shining, more punctured; head purple blue.....	<i>chlorocyanca</i> Ckll.	
4. Mesothorax densely punctured; hair of pleura pure white.....	<i>fragariella</i> Ckll.	
Mesothorax shining, not densely punctured on disc.....		5
5. Hair of mesopleura white; white marks only on first three abdominal segments; female.....	<i>holocyanca</i> Ckll.	
Hair of mesopleura black or dark grey; white marks or bands on five segments; males.....		6
6. Mesothorax bright steel blue.....	<i>nitidula</i> Ckll.	
Mesothorax dark green.....	<i>subglauca</i> Ckll.	

Subsequent work may show that some of these represent varieties or races rather than species, but at present no intermediates are known.

68. *Stelis laticincta* Cresson

Cascada, Fresno County, California, 6000 ft., July 29, 1 male, 1 female (Van Duzee); Cazadero, September 2, male (Van Duzee); Stockton, August 21, male (Van Duzee). Cresson described the female; I described the male in 1904. The species is very variable in the male, in the width of the bands along anterior orbits, the amount of yellow on the pleura, and the presence or absence of yellow on the sixth abdominal tergite. It seems probable that there are two or three separable races, but more material is needed to demonstrate this.

Mr. W. M. Giffard collected in Santa Clara County, California, July 16, a female *S. laticincta* agreeing with Cresson's description in having the clypeus black with a yellow spot on

each side. A female from Cazadero, California, has the clypeus yellow with the upper margin broadly black.

69. *Stelis sexmaculata* Ashmead

Male: Blue Lakes, Lake County, California, May 16 (Van Duzee). The specimen has eight spots on the abdomen, as is frequently the case.

70. *Stelis carnifex* Cockerell

Female: S. Sonoma County, California, June 26 (Kusche); compared with the cotype from Nevada, the face is wider and the head more densely punctured.

Male: Phillips Station, Placer County, California, July 24 (Blaisdell).

This species, as now understood, appears to be very variable. Additional material may show that it should be divided.

71. *Stelis montana* Cresson

Both sexes, Oregon, the male Warner Mts., Lake County, June 19 (Van Dyke); the female Wallowa Mts., Baker County, July 6 (Van Dyke); female, Park City, Utah, July 3 (Van Duzee).

72. *Stelis callura* Cockerell, new species

Male: Length 9 mm.; very robust, dark rich purple, including legs, greenish in middle of face, particularly supraclypeal area, flushed with greenish on mesothorax and scutellum, middle of postscutellum entirely green; pubescence entirely black; facial quadrangle much longer than broad, clypeus excessively densely punctured; scape green, flagellum black; mesothorax densely punctured, but shining between the punctures on disc; tegulae largely metallic, strongly punctured; wings hyaline, more or less stained with brown along the veins, which are black; second recurrent going well beyond end of second cubital cell; abdomen with very rich purple (rosy-purple) suffusion.

Related to *S. carnifex* Ckll., but much larger than the male of that species, and with paler wings.

Type: Male, No. 1674, Mus. Calif. Acad. Sci., collected by E. P. Van Duzee, June 24, 1922, in Parley Cañon, Salt Lake City, Utah.

73. *Stelis fremonti* Cockerell, new species

Females: Length fully 10 mm.; similar to *S. montana*, but larger and more robust; mesothorax dull and more densely punctured; first recurrent nervure joining second cubital cell at a distance fully equal to half length of intercubitus; face strongly suffused with purple; abdomen rich deep indigo blue, very densely punctured.

Perhaps a race of *S. montana*, but apparently distinct.

Type: Female, No. 1675, Mus. Calif. Acad. Sci., collected by E. C. Van Dyke, June 18, 1922, in Fremont National Forest, Klamath Co., Oregon, at 5000 ft.

The above species of *Stelis* may be separated thus:

Blue or green, with no marks on abdomen, and with black hair on face	1
Without metallic colors.....	6
1. Small, about 7 mm. long; males.....	2
Larger, 9 mm. or over.....	3
2. Abdomen shining, not very densely punctured; mesothorax olive green	<i>montana</i> Cresson
Abdomen very densely punctured; mesothorax blue.....	<i>carnifex</i> Ckll.
3. Abdomen shining green; females.....	<i>montana</i> Cresson
Abdomen blue or purple, less shining.....	4
4. Abdomen deep purple; wings nearly clear.....	<i>callura</i> Ckll.
Abdomen rich blue; wings dilute fuliginous.....	5
5. Larger; mesothorax dull and more densely punctured.....	<i>fremonti</i> Ckll.
Smaller; mesothorax less densely punctured; female.....	<i>carnifex</i> Ckll.
6. Abdomen black, with greenish-white lateral spots.....	<i>sexmaculata</i> Ashm.
Abdomen with entire deep yellow bands.....	<i>laticincta</i> Cress.

All except the two last belong to the subgenus *Pavostelis* Sladen.

74. *Xylocopa varipuncta* Patton

Both sexes; Soboba Springs, Riverside County, June 3 (Van Duzee).

75. *Xylocopa orpifex* Smith

Mt. St. Helena, Napa County, California, June 9 (Van Duzee); S. Sonoma County., male April 6, female July 10 (J. A. Kusche); Yosemite Valley, June (Van Dyke); Laurel Dell, Lake County, August 2 (Van Duzee).

76. *Xylocopa virginica* (Drury)

Plummers I., Md., May 25 (Blaisdell).

77. *Xylocopa californica* Cresson

Yosemite Valley, June 10 (Van Dyke); Carrville, Trinity County, California, June 29 (Van Dyke).

78. *Xylocopa arizonensis* Cresson

Fort Bliss, Texas, May 1 (J. I. Carlson).

79. *Bombus sonorus* Say

One from La Paz, June 29 (Ferris). Also taken by the Academy Expedition at La Paz, June 28; Tiburon Island, (Academy Expedition), July 4 (Van Duzee); Sierra Laguna, 5400 feet, August 15.

80. *Ceratina tejonensis* Cresson

Male: Yorkville, Mendocino County, California, May 1 (Van Duzee). The apex of the abdomen presents an obtuse median projection, after the style of the much smaller *C.*

nanula Ckll., whereas according to H. S. Smith's key it should be more after the style of *C. dupla* Say. However, the specimen agrees with Cresson's description, and I think it is referable to his species.

Female: Shasta County, Calif., June 26 (J. A. Kusche). Known from *C. pacifica* H. S. Smith by the entirely green tubercles and absence of a large impunctate area on pleura.

